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# A NEW LITHOTOMY OPERATION.

BY

HUGH OWEN THOMAS,

LIVERPOOL.

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## A NEW LITHOTOMY OPERATION.

BY HUGH OWEN THOMAS (LIVERPOOL).

MANY modifications of the old lateral operation of lithotomy have been introduced into surgery during the last century, mostly devised to minimize its dangers, yet in some degree to lessen the amount of manual dexterity—required for the successful performance of the operation. I have operated up to this date upon thirty cases ; not an extensive experience, true, but this number affords a fair opportunity of becoming familiar with the operation. The first case in which I operated, the ordinary curved staff with lateral groove was used ; the incision and penetration were performed with an ordinary scalpel ; the case was a success ; and on cogitation it appeared to me to be an unsatisfactory manner of incising the bladder for the removal of stone, too much being left to the surgeon's skill. On reviewing the various methods, Civiale's medio-bilateral operation presented an important advantage, as it afforded a larger incision on entering the bladder, and consequently caused less injury in withdrawing the stone. This operation I performed twice, using his curved median staff and double-bladed bistoury. These two cases were also successful, but there was secondary hæmorrhage in both instances ; this mode of operation appears to be safer and simpler on paper than in practice. My next change occurred when Mr. Hutchinson published his medio-bilateral operation with rectangular staff and median groove, flat bilateral cutting gorget, with probe point. One operation I performed by Hutchinson's method ; this was a success ; but as a whole the mode of operation did not satisfy me ; nevertheless, Mr. Hutchinson's hollow staff, with median groove, excited my admiration, and I decided, that if I operated again, to employ this excellent instrument in combination with Civiale's double-bladed bistoury. This decision I was able to test, and was so pleased that I thought I had now a plan of operation which would come up to my ideal. Before long I discovered in Braithwaite's "Retrospect" a description of Dr. Corbett's double rectangular staff with lateral grooves. This, I at once saw, could be adapted to the median operation, and I planned a method and means of operation which may be said to be copied from—The old operation, a scalpel ; from

Dr. Buchanan's rectangular staff (how I was ever so obtuse as to use a curved staff I cannot explain); Hutchinson's median groove; Civiale's bilateral incision; Corbett's double staff; these I combined, with a small contribution by "Thomas," so that I believe the method I am about to describe can be performed with but little risk to the patient, requiring less manual dexterity on the part of the surgeon than any other method. From the moment of incising the skin of the perineum opening to the bladder, there is no interruption or change of instruments, the only merit of the old lateral operation.

In my earlier experience of the medio-bilateral operation, I noticed that—though my cases always did well, losing only two out of thirty, one a child nine months, and an adult of sixty-four—secondary hæmorrhage occurred out of proportion to the number of cases operated upon; but, as—in my opinion—I perfected the means for, and the manner of operating, I no longer noticed any cases of secondary hæmorrhage; indeed, the majority of those treated in later years were almost bloodless.

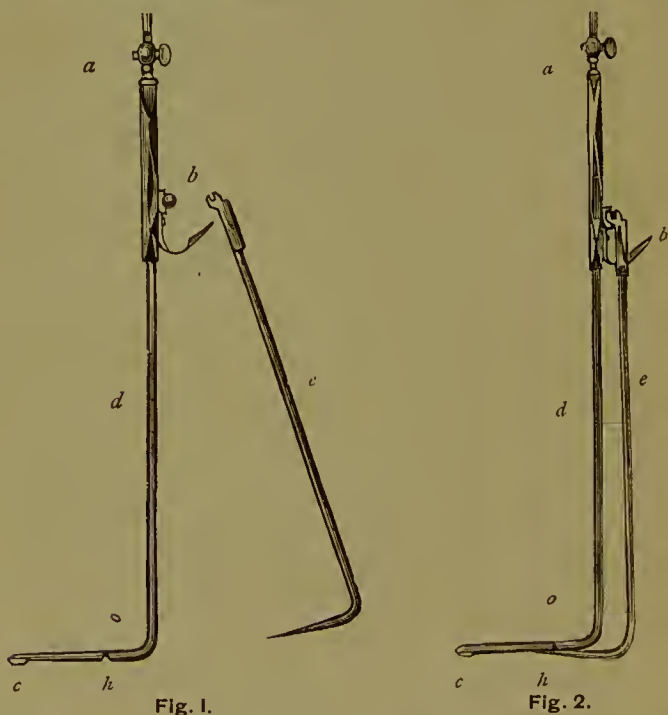


Fig. 1. is an illustration of the urethral and extra-urethral staffs disconnected from each other by means of a hinge *b*. The urethral staff is hollow up to the right

angle, from whence the median groove commences and terminates at the wooden cylinder sunk into the groove at *c*. At *a* is a stop-cock for retention of fluid injected into the bladder before operating. Situated at about an inch from the angle is a notch partly secting the median groove—fig. 1 *h*. The joint at *b* unlocks when the extra-urethral



Fig. 3.



Fig. 4.

staff is at right angles to the urethral one, but cannot escape; as soon as it descends parallel with the other, it is then locked by an ordinary spring catch.

Fig. 2 shows the instrument as in operation. The second staff is also grooved and pointed, so as, when in use, to enter and sink into the groove of the first staff at the notch (*h*) only. It is very necessary that the instrument maker when constructing the second staff, should make its angle, so that when it is in position, it is a little lower than that of the first one; otherwise, the second staff in describing an arc to enter the perineum will enter high and lock low, which may lead the surgeon to make his incisions rather high, whereas by attention to making the second staff a little longer than the first, it enters the perineum low, and gradually rises to the notch, thus almost certainly protecting the bulb and its artery.

Fig. 3 shows the instrument grasped by the hand, as in the manner of operating when about to incise the perineum ; this instrument is a combination of a scalpel blade at one end *f*, and a cutting triangular gorget *g* at the other end.

Fig. 4 shows the same instrument reversed, and held as when in the act of sliding along the double grooves of the staffs to incise the membranous portion of the urethra and prostate. The operation comes under the class of "medio-bilateral with rectangular staff," and is performed by me in this manner. The patient being placed in the usual lithotomy position, the urethral staff is passed and the viscus is distended with two or three ounces of water, and retained by shutting the stop-cock ; and the handle of the single staff is handed to an assistant, who is directed to hold it at right angles to the trunk. The next step is that the index-finger of the left hand is passed into the rectum, and on its finding the membranous portion of the urethra, the surgeon so locates the urethral staff in charge of the assistant that he (the operator) can feel the notch, fig. 1, *h*, in the membranous portion of the urethra, close to the prostate, still retaining the finger in the rectum. With the scalpel end of the combination instrument, as seen in fig. 3, a perpendicular incision is made in the median line of the perineum, commencing about two inches above the anus, and terminating about half an inch from its edge. This incision is crossed by another at right angles to it at its lowest end, about one and a half inches in length, so that the incisions present the lines of an inverted T—thus,  $\perp$  ; then guided by the finger in the rectum with a few strokes of the scalpel, the skin and other superficial structures are divided, advancing by careful dissection as close as practicable to the rectum, without wounding it in the direction of the membranous urethra, until progress is made to a point supposed to lie underneath the bulb when the second staff (which was in position ready for action) is brought down, and its sharp point made to enter the wound and come to a stop on piercing the urethra at the notch *h*, fig. 2, when, perhaps, a little fluid may escape. The surgeon instantly reverses his cutting instrument as shown in fig. 4, places the ridge of the triangular gorget *g* in the median groove of the second staff, pushing it forward until its further progress is arrested by its point coming in contact with the wooden cylinder *c*, on the extreme end of the urethral staff ; the liquid contents of the bladder run out, and the surgeon withdraws his finger from the rectum and inserts it through the bilateral incision made in the prostate, and over the finger the gorget is now withdrawn, then the stone felt for, the staffs are removed and the stone extracted.



The operation is really easier to perform than this description would lead the surgeon to suppose, provided the two staffs are properly constructed in relation to each other. They should be both rectangular, or, if any deviation is made, the angle should be slightly less than a right angle; and the angle of the second staff should be slightly lower than that of the first when locked home. This causes the gorget to enter low in the perineum, and rise to its work rather than advance horizontally to incise the membranous urethra and prostate. I am aware that other surgeons have introduced to our notice double lithotomy staffs, for instance, at page 451, in the third edition of Mr. Harrison's "Lecturers on Surgical Disorders of the Urinary Organs," we have an illustration of a double lithotomy staff, and blunt-pointed, but cutting-edged gorget, a modification of a similar form introduced to the notice of the profession thirty years ago. The original one, its predecessor, having a cutting instrument attached to the second staff by a hinge, whereas, the latter, devised by Dr. Smith, of Baltimore, uses the gorget disconnected from the staffs. On carefully examining the illustration of Dr. Smith's instrument I noticed that the angle of the urethral staff was curved, and much more obtuse than a right angle. This is, in my opinion, provided that the staff were held in the usual manner, or the manner in which I have instructed, a very dangerous instrument to employ, but I find from the position of the hand in the illustration that it is intended to be held by the operator's left hand, while with the right hand he uses the gorget. This manner of performing the operation enables the operator to practically reduce the obtuse angle of his instrument to a right angle, or even less. This leaves one item, at least, to the operator's judgment, which Corbett's instrument, or its modification by myself, does not.

Small contributions are sometimes thankfully received, and here are submitted to the reader what little I have to contribute concerning the after treatment of lithotomy. It appears to me that to this part of the operation surgeons of large experience have given us but little information. In early years, during my search for information by which to interpret unwelcome symptoms, I obtained very little assistance, and it is remarkable that surgeons who have performed their scores of lithotomies have not published a series of typical cases illustrative of the after-treatment and its complications. One case would do, for instance, in which the patient operated upon recovered in a few days. Of such cases we have plenty of reports already; but more of those cases would be welcomed in which the patient, whether he recovered or not, had grave symptoms. These are the cases

for which a beginner searches in vain when about to try his skill as a lithotomist. The first thing to which the surgeon gives his attention, after extracting the stone, and washing out the bladder, is the question of placing a drainage-tube in the wound. It is my invariable practice to put as large a drainage-tube in the wound as it will admit. For a long time I employed glass tubes. Of late years I prefer rubber ones; and no tube which I have ever seen devised appears to me to answer so well as a strong rubber one, having the same diameter of opening at both ends. The tube is retained in position by a thread passed through its diameter, and attached to thread loops, which have already been prepared by suturing the skin over the ischium. The patient now has a large bib placed under him, into which has been laid a good supply of medicated sawdust, to which has been added a small percentage of precipitated chalk; this is changed two or three times a day. Now an opiate is given to the patient, and as the bowels have been cleaned by a purgative and an enema before the operations, they need not be disturbed until spontaneous action occurs, which can be safely allowed, even if we have to wait for one or two weeks, provided the patient's diet is properly selected to meet the requirements of our intentions. It has been my practice to leave the perineal tube to drain the bladder until all the constitutional signs of operative procedure, and traces of any lesion caused by the pressure of the stone in the viscus, had passed away. No matter how well the patient may progress, I always retain it three days at least, and when the tube is finally withdrawn, the bladder is drained—per urethram—with that convenient device, the elastic rubber catheter, changing and cleaning the catheter night and morning; occasionally also washing out the viscus through the catheter with a weak solution of chloride of zinc.

Some patients at first rather object to urethral drainage, but I found when discontinued they invariably request its re-adoption, as it materially diminishes the urinary irritation felt at the perineal wound. As to the mishaps of lithotomy, my two fatal cases bring to my recollection a comment by Sir W. Ferguson made in his "Lectures on the Progress of Modern Surgery," to this effect: "he had witnessed the most skilful operations terminate fatally, and very unskilfully performed ones progress exceedingly well." To my mind the last case which was fatal in my practice was the best performed of any, not half an ounce of blood was lost; the only hitch that occurred arose from my supposing the stone to be rather smaller than it turned out to be, so that my prostatic incision was too limited, and had to be enlarged to rectify my error; this kept the patient an extra five minutes under ether, so



causing him to have been under the influence of the ether from the commencement of its administration until completion of operation, fully half an hour. To the prolonged action of the anæsthetic upon a well worn man of sixty-two years of age with highly ætheromatous arteries, I chiefly attribute the fatal termination. During the first three days, with the exception of a dry, brown tongue, there were no grave symptoms of constitutional disturbance. On the third day he was seized with vomiting which lasted a few hours, and was followed by hypostatic congestion of both lungs, and he succumbed apparently to this lesion on the fifth day. The other fatal case was a child twelve months old. Here again there was a delay in the extraction of the stone; it could be easily felt on the introduction of the finger, but its detection by the forceps was not so easy, as it lay up high behind the pubes. Its extraction delayed the operation five minutes. Again as the cause of fatality in both cases, it is very significant that the infant was subjected to no preliminary preparation, and the adult to only three days, and as I have committed this omission on five occasions, every one of which operations were followed by grave symptoms, I cannot help but think that a week or two, perhaps more, of preparation, which is my usual practice, to be a valuable item towards success. Last year a patient of seventy-two years of age was operated upon, a most uninviting subject. Six weeks were devoted to his preparation, and he did exceptionally well. Twice have I successfully at the advanced age of seventy-two years, and from one removed seven calculi each of three quarters of an inch diameter. He was an asthmatic subject, and had angular deformity of left hip-joint. He returned to me twelve months afterwards for examination and on sounding the viscus, there was evidence of his having made up for his loss, there had formed another nest of calculi. On this occasion he declined to be recut, not an unwise decision as he appeared, independently of his years, a well worn man, though not a confirmed invalid. Once I recut a boy of three and a half years, and extracted a stone, though six months previously another had been removed while he was an inmate of a public hospital. On another occasion after incising the viscus there was extracted the wooden holder of a writing pen.

I have been much impressed during my experience of lithotomy by the better progress of cases which had been prepared, as compared with those which had only a short period of introduction to the operation. To the most unwelcome of the two cases of seventy-two years, I gave six weeks' preparation, and succeeded, though several surgeons formulated the opinion that lithotomy was highly risky.

For most cases, however, two weeks is sufficient, during which time the patient should be kept reclining in bed, in a warm room, diet selected, light and nourishing ; and just a day or two before the operation the diet should be selected, in view of the purgative to be given a day before the operation, so as to make sure that the bowels are free from excreta, and that the aperient acts without discomfort, and probably brings down most of the bowels' contents to the rectum, to be washed out a few hours before the operation is commenced.

As regards the prevention of secondary hæmorrhage, it is my practice to use a rather capacious tube, with "parallel bore," and as large as the wound will admit, retained three or four days ; and should the urine drained appear much coloured, or a blood-clot deposit in the bladder, the tube ought to be retained even longer. When the urine comes away colourless, a slightly smaller tube can be daily substituted, gradually reducing until the surgeon's anxiety has passed away. The urine may flow coloured for a few days from the presence of more or less clot in the bladder, the result, perhaps, of mere oozing into the viscus during the few first hours after operating. It is often said that this is of no consequence. A small clot is, probably, of no moment, but except it be small, it may give the patient nearly as much discomfort as calculi ; but should there be allowed for a few hours a large clot, the patient generally shows the signs of irritative fever, and here large perineal tubes with parallel bores become extra serviceable, as small clots can be washed out through them, and large clots can be broken up by the introduction of a suitable long probe, and afterwards washed away ; or as I have done, a urethral forceps can be introduced, clot broken and withdrawn, and then thoroughly, antiseptically, washing out the viscus. It is my practice, as I before mentioned, as soon as the perineal tube has answered its purpose, to introduce an india-rubber catheter per urethram, and divert the urine from the wound. The operation is sometimes difficult of performance if the surgeon has not carefully selected his rubber catheters. Some of them are sold with solid ends up to the eye. These, when wire styleted, and introduced, and they begin to pass under the pubes, the stylet comes out through the eye, giving pain to the patient and alarm, perhaps, to the surgeon, who notices a slight bleeding from the perineal wound. To avoid this difficulty, let the surgeon purchase only those rubber catheters which, on examination, he finds are hollowed well past the eye, and feel soft at the end, showing the end is coned hollow, and when about to use the catheter, to draw it over the stylet, so that its eye is on the convex side of the stylet, and also make sure that it does not rotate from that aspect during introduction.

My experience of secondary hæmorrhage consists of only two cases of lithotomy, and one of perineal section. The mishap in the two lithotomy cases, I attribute to entering the perineum not so low down as I do now; a fault of my earlier operations. The first case was operated upon November 20th, 1868; the second, November 7th, 1873. The first case bled the fifth day after the operation, when the drainage-tube—which was small—not acting, the patient became feverish and delirious. He was placed to sit in warm water, which relieved the constitutional symptoms, but was followed in a few hours by an alarming hæmorrhage. Now there was done—what should have been done before—an exploration of the wound with an oiled finger; tube introduced, and wound plugged around it. This did not answer the purpose, so it was removed, and the wound dilated with a female urethra dilator, and the large clot which I found in the bladder was removed with the urethral forceps. The dilator was retained inside two days, when it was removed, and in its place was introduced a small bivalve rectum speculum, which was removed in three days, and the patient after this did very well. The patient's age was about twenty-five years. The stone was a round mulberry two inches in diameter.

My second case in which hæmorrhage occurred, the tube was removed November 11th, four days after the operation. November 13th, slight bleeding occurred, and the tube re-introduced, and retained three days, which arrested the hæmorrhage. Again, one day after removal of tube, there was free bleeding which was controlled by pressure of the finger on the left side of the wound. This was withdrawn after three hours, and a large tube introduced, and the patient remained free from hæmorrhage until November 27. Then a large tube, with three quarter's of an inch bore, containing ice was introduced; nevertheless, November 30th, bleeding occurred again, and the bladder became full of clot. This was removed by suction. December 6th, bled again. Now a glass tube was carefully fixed obliquely in the wound, so as to press on the left side of the wound. This was retained until December 22nd, when a rubber catheter was passed into the bladder to drain, per urethram, and the case rapidly recovered after this date.

The third case of hæmorrhage occurred after perineal section to relieve stricture. Blood persistently oozed from the wound for three days, and the patient became so drained that he appeared much blanched, and I decided to put a tube in the wound, and firmly stitch the wound with deep sutures, and thus arrest what was only a general oozing, using a large curved strong needle for the purpose;

but, to my astonishment, the blood draining from the suture holes appeared as great as that from the wound, so the sutures and tube were removed, the pelvis well elevated and the bladder well syringed out with strong chloride of zinc solution. This case did well.

The mishap of after-incising the bladder, failing to find the stone, has happened perhaps oftener than we suppose, as it is a very pardonable sin to omit reporting such cases. Modern writers upon lithotomy very seldom catalogue this amongst the complications of the operation, or refer to it at all. Lithotomists of the last and early parts of this century frequently referred to this mishap, and the mode of correction. In a famous medico-legal libel case the defendant was supposed to have "scored," when in cross-examining an eminent witness for the plaintiff, a celebrated lithotomist, it was shown that he was unacquainted with the practice of his predecessors under such a difficulty; ignorant of the operation (*à deux temps*). The perusal of the cross-examination in this case first introduced me to the procedure, which is evidently of Gallic origin. Some time after, whilst searching some of the old medical periodicals, I found some remarks concerning lithotomy by the late Mr. Lizzars, and he gave an illustration, an episode from his own experience. Being called far away from home to remove a calculus, he performed the operation, assisted by the local practitioners; but though he had satisfied himself as to the existence of stone before the operation, on incising the bladder he could not find it. Taking the practitioners aside, he assured them, that from the experience of his predecessors, if they explored the bladder next day, they would find the stone at the incision. After giving them this information, he left for home. His advice was followed; the stone was found, and successfully extracted. From this we may conclude that if a stone cannot be found or gripped, and afterwards lost, it would be proper practice to extract twenty-four hours after the operation, rather than prolong the initial operation.

The instruments, as shown in the illustrations, were made and excellently finished for me by Messrs. Khroné, and Co., London. The angular gorgets (four sizes) being made to suit the probable extent of incision, and the staff (three sizes) suitable for the varying ages.















